

IN THE CLAIMS

1. (Currently amended) ~~An isolated nucleic acid molecule comprising a sequence of nucleotides derived from a eukaryotic chromosome and encompassing a neocentromere, wherein said neocentromere is derived from a eukaryotic chromosome and does not have any detectable alpha satellite DNA as determined by fluorescent in situ hybridisation (FISH), or a functional derivative synthetic or hybrid form thereof which nucleic acid molecule or its derivatives, synthetic forms or hybrid forms~~ wherein said nucleic acid molecule is at least 80 kb in length and either (i) hybridizes to SEQ ID NO: 3 under high stringency conditions which comprise from at least about 31% to at least about 50% v/v formamide and from at least about 0.01M to at least about 0.15 salt for hybridisation, and at least about 0.01M to at least about 0.15M for washing, or (ii) is at least 80% identical with SEQ ID NO: 3, and wherein said nucleic acid molecule, when introduced into a compatible cell, is capable of replicating, acting as an extra-chromosomal element and segregating with cell division.
2. (Currently amended 1) ~~An~~ The isolated nucleic acid molecule according to claim 1 wherein the eukaryotic chromosome is a mammalian chromosome.
3. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 2 wherein the chromosome is a human chromosome.
4. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 2 wherein the nucleic acid molecule is ~~capable of associating with~~ binds to centromeric binding proteins (CENP)-A and -C or antibodies thereto.
5. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to ~~claim 4~~ claim 3 wherein the chromosome is human chromosome 10 ~~or a modified form of human chromosome 10 or its non-human mammalian or non-mammalian equivalent.~~
6. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 5 wherein said neocentromere ~~the nucleotide sequence corresponds to~~ comprises a region mapping between q24 and q26 on said human chromosome 10.

7. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 53 wherein ~~a modified form of said~~ human chromosome 10 is a mardel (10) chromosome.

8-14. (Cancelled)

15. (Currently amended) ~~An~~ The isolated nucleic acid molecule of claim 1 ~~comprising a nucleotide sequence encompassing a neocentromere or a functional derivative, synthetic or hybrid form thereof which when~~ wherein said nucleic acid molecule is in linear form and co-introduced into a cell together with a telomeric sequence, ~~is capable of replicating, remaining as an extra-chromosomal element and segregates with cell division.~~

16. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 15 wherein ~~the nucleotide sequence is derived from~~ the eukaryotic chromosome is a mammalian chromosome.

17. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 16 wherein said nucleic acid molecule ~~is capable of associating with~~ binds to CENP-A and CENP-C antibodies.

18. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 16 ~~or 17~~ wherein the mammalian chromosome is human chromosome 10 ~~or a modified form of chromosome 10 or its non-human mammalian or non-mammalian equivalent.~~

19. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 18 wherein ~~the nucleotide sequence corresponds to~~ neocentromere comprises a region mapping between q24 and q26 on said human chromosome 10.

20. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim ~~18~~ 15 wherein ~~the modified form of human~~ said chromosome ~~10~~ is a human mardel (10) chromosome.

21-27. (Cancelled)

28. (Currently amended) ~~An isolated nucleic acid molecule or its chemical equivalent encompassing comprising a human neocentromere or a functional derivative thereof or a latent, synthetic, hybrid or its mammalian or non-mammalian homologue which does not have any detectable alpha satellite DNA as determined by fluorescent in situ hybridisation (FISH), wherein said nucleic acid molecule is at least 80 kb in length and either (i) hybridizes to SEQ ID NO: 3 under high stringency conditions which comprise from at least about 31% to at least about 50% v/v formamide and from at least about 0.01M to at least about 0.15 salt for hybridisation, and at least about 0.01M to at least about 0.15M for washing, or (ii) is at least 80% identical with SEQ ID NO: 3, and wherein said nucleic acid molecule, when introduced into a cell, is capable of replicating, acting as an extra-chromosomal element and segregating with cell division.~~

29. (Cancelled)

30. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 29~~28~~ wherein the nucleic acid molecule ~~is capable of associating with~~ binds to centromeric binding proteins (CENP)-A and -C or antibodies thereto.

31. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 29 ~~or~~ 30 wherein said neocentromere ~~the chromosome~~ is derived from human chromosome 10 ~~or a modified form of human chromosome 10 or its non-human mammalian or non-mammalian equivalent.~~

32. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 31 ~~wherein the nucleotide sequence corresponds to~~ said neocentromere comprises a region mapping between q24 and q26 on said human chromosome 10.

33. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 31~~28~~ wherein ~~a modified form of human chromosome 10 is~~ said neocentromere is derived from a human mardel (10) chromosome.

34-39. (Cancelled)

40. (Currently amended) A genetic construct comprising an origin of replication for a eukaryotic cell and a the nucleic acid molecule of claim 1, encompassing a eukaryotic neocentromere or a functional derivative thereof or a latent, synthetic, hybrid form thereof or its mammalian or non-mammalian homologue flanked by operably linked to telomeric nucleotide sequences functional in the cell in which the genetic construct is to replicate and wherein said genetic construct, when introduced into a cell, is a replicating, extra-chromosomal element which segregates with cell division.

41. (Currently amended) A The genetic construct according to claim 40 wherein the eukaryotic neocentromere-chromosome is a mammalian centromere-chromosome.

42. (Currently amended) ~~An isolated nucleic acid molecule~~ The genetic construct according to claim 41 wherein the ~~neocentromere~~ eukaryotic chromosome is a human neocentromere-chromosome.

43. (Currently amended) ~~An isolated nucleic acid molecule~~ The genetic construct according to claim 42 wherein the nucleic acid molecule ~~is capable of associating with~~ binds to CENP-A and -C or antibodies thereto.

44. (Currently amended) ~~An isolated nucleic acid molecule~~ The genetic construct according to claim 43 wherein the neocentromere is from human chromosome 10 ~~or a modified form of human chromosome 10 or its non-human mammalian or non-mammalian equivalent~~.

45. (Currently amended) ~~An isolated nucleic acid molecule~~ The genetic construct according to claim 44 wherein the ~~human~~ neocentromere ~~maps to~~ comprises a region between q24 and q26 on said human chromosome 10.

46. (Currently amended) ~~An isolated nucleic acid molecule~~ The genetic construct according to claim 44 wherein ~~a modified form of human~~ said chromosome-10 is a human mardel (10) chromosome.

47-60. (Cancelled)

61. (Currently amended) ~~An isolated nucleic acid molecule comprising a sequence of nucleotides which defines~~ a eukaryotic neocentromere, wherein said neocentromere does not have any detectable alpha satellite DNA as determined by fluorescent in situ hybridisation (FISH), wherein said nucleic acid molecule is at least 80 kb in length and either (i) hybridises to SEQ ID NO: 3 under high stringency conditions which comprise from at least about 31% to at least about 50% v/v formamide and from at least about 0.01M to at least about 0.15 salt for hybridisation, and at least about 0.01M to at least about 0.15M for washing, or (ii) is at least 80% identical with SEQ ID NO: 3, and wherein said nucleic acid molecule, when introduced into a cell, is capable of replicating, acting as an extra-chromosomal element and segregating with cell division.

62. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 61 wherein the neocentromere is derived from a mammalian chromosome.

63. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 61 wherein the neocentromere is derived from a human chromosome.

64. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 63 wherein the nucleic acid molecule ~~is capable of associating with~~ binds to centromeric binding proteins (CENP)-A and -C or antibodies thereto.

65. (Currently amended) ~~An~~ The isolated acid molecule according to claim 63 ~~or 64~~ wherein the chromosome is human chromosome 10 ~~or a modified form of human chromosome 10 or its non-human mammalian or non-mammalian equivalent.~~

66. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim 65 wherein the ~~nucleotide sequence corresponds to~~ neocentromere comprises a region mapping between q24 and q26 on said human chromosome 10.

67. (Currently amended) ~~An~~ The isolated nucleic acid molecule according to claim ~~65~~ 63

wherein ~~a modified form of human chromosome 10~~ said neocentromere is derived from a
human mardel (10) chromosome.

68-74. (Cancelled)